

# **Geospatial Techniques to Slope Risk Rating for Tea Planted Areas in Rathnapura District, Sri Lanka**

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Rathnapura district is one of the severe landslide prone districts in Sri Lanka. Many of the historical landslide records of the district indicate that pre-disaster land use of the landslides is with tea plantation. Even though slope is a noteworthy factor for tea plantation, it can be reversely impacted due to human induced changes of the land hand in hand with natural environmental causes such as improper land preparedness techniques and scouring or erosion of the toe of the slope. Therefore, the study was carried out for pre-determination of risky tea plantation areas in order to propose the areas need possible land use changes. Firstly, a Normalized Differential Vegetation Index map was created in order to identify the spatial distribution of tea plantation in the district. Slope map was created using slope relevant limiting levels for tea plantation, which was identified through Advisory Circular of the Tea Research Institute of Sri Lanka. According to that, slopes of tea plantation are categorized as 0-25% with none risk, 25-70% is moderate risk and more than 70% with severe risk. Final map was created using Fuzzy overlay technique. Slope risk map for tea planted areas indicates that, the highest risk accumulation is in Kolonne Korale, Opanayake, Balangoda and Weligepola especially in the Grama Niladhari Divisions of Boraluwageaina, Pupalaketiya, Koppakanda, Welanga, Gawaranhene, Kendaketiya, Pelendakanda and Gangodagama. According to the geometric calculations, Weligepola, Kolonne Korale, Balangoda and Opanayake occupied nearly 1000 acres of risk lands for tea plantation in Rathnapura district. As there are some historical landslides that occurred within tea planted areas in the district, pre-determination of risk areas will be important in order to shift to another cultivation or abandon the land rather than triggering mass movement risks.

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